

VU Research Portal

Getting ready for the marriage market? The association between divorce risks and investments in attractive body mass among married Europeans

Lundborg, N.; Lindgren, B.; Nystedt, P.

published in

Journal of Biosocial Science
2007

DOI (link to publisher)

[10.1017/S0021932006001611](https://doi.org/10.1017/S0021932006001611)

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Lundborg, N., Lindgren, B., & Nystedt, P. (2007). Getting ready for the marriage market? The association between divorce risks and investments in attractive body mass among married Europeans. *Journal of Biosocial Science*, 39, 531-544. <https://doi.org/10.1017/S0021932006001611>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

GETTING READY FOR THE MARRIAGE MARKET? THE ASSOCIATION BETWEEN DIVORCE RISKS AND INVESTMENTS IN ATTRACTIVE BODY MASS AMONG MARRIED EUROPEANS

PETTER LUNDBORG*‡¶, PAUL NYSTEDT*†§ AND BJÖRN LINDGREN*‡§

**Lund University Centre for Health Economics (LUCHE), Lund, Sweden,
†Department of Economics, Linköping University, Sweden, ‡Department of Health
Sciences, Lund University, Sweden, ¶Department of Economics, Free University,
Amsterdam, The Netherlands and §Vårdal Institute, Lund University, Sweden*

Summary. This article explores to what extent married middle-aged individuals in Europe are governed by the risk of experiencing divorce, when shaping their physical appearance. The main result is that divorce risks, proxied by national divorce rates, are negatively connected to body mass index (BMI) among married individuals but unrelated to BMI among singles. Hence, it seems that married people in societies where divorce risks are high are more inclined to invest in their outer appearance. One interpretation is that high divorce rates make married people prepare for a potential divorce and future return to the marriage market.

Introduction

A wide variety of studies have connected the status of being married or having a partner to a range of positive primary outcomes, such as longevity, health, income, wealth and overall life satisfaction (Hu & Goldman, 1990; Coombs, 1991; Joung *et al.*, 1994; Waite & Gallagher, 2000; Van Poppel & Joung, 2001). Spouses may benefit from household economies of scale and specialization gains as well as supporting each other materially, emotionally and socially, though marriage ‘selection’ rather than ‘protection’ may account for some of the positive correlations (Goldman, 1993; Murray, 2000). Hence, attracting a ‘high quality’ partner seems essential for single individuals, but the success rate is dependent on the individual’s own value in the marriage market (Becker, 1974, 1981). Naturally, this value is a complex mixture of characteristics, ranging from, for example, personality, physical attractiveness and health to education, earnings, wealth and social status. Many of these features are determined rather early in life. Genetic predispositions govern significant portions of one’s looks and personality, and most people have completed

their formal education well before the age of 30. The marriage-market literature has focused on education and wage among rather young people, generally finding positive assortative mating (Lam, 1988; Mare, 1991; Bloch & Ryder, 2000; Nakosteen *et al.*, 2004).

This paper departs from the previous literature by viewing marriage-market-related incentives and behaviour from a different angle. Focus is set on to what extent married middle-aged individuals in Europe are governed by the risk of experiencing divorce, when shaping their physical appearance. The rationale is this: while many other components that determine one's marriage-market value may be rather fixed for middle-aged and older individuals, the body constitution is under the continuous influence of dietary and exercise behaviour. Thus, moderate intake of food and drink and regular physical exercise are options available to control one's BMI as a way to act precautionary in order to stand well prepared for a potential future re-entering into the marriage market.

The norm on what is perceived as an appropriate and attractive body shape varies over time as well as between cultures. During major parts of human history, food has been a scarce resource not exceeding subsistence level by far. Hence, a somewhat 'prominent stature' has sometimes been considered desirable since, in contrast to being thin, it signalled wealth as well as good health and fertility. Eligibly, being of considerable size is still viewed as desirable in some cultural settings. For instance, the social recognition and respect of Japanese sumo wrestlers is well known. Among the Annangs of Nigeria, young women traditionally spend time in so-called 'fattening rooms' in order to get in shape for attracting a man to marry (Brink, 1995).

During the 20th century, shortage of food has become a lesser problem in the Western world and the risk of famines has been virtually eliminated. Since the 1970s, factors such as decreasing real price of food, lower physical calorie expenditure at work, aggressive marketing and increased establishment of fast food restaurants, have contributed to a development where overweight and obesity have in fact become an exploding public health problem (e.g. Philipson, 2001; James *et al.*, 2001; Chou *et al.*, 2004; Helmchen & Henderson, 2004). Hence, the potential positive link between health and a rather massive body constitution has been reversed. Consequently, the current Western norm favours slenderness and fitness. Whereas there is a negative association between socioeconomic status and body mass in developed societies, at least for women, the opposite is true in developing societies, where the growth of body mass over time has been found to be associated with socioeconomic status (Ball & Crawford, 2005). Attitudes towards obesity and thinness in different societies are congruent with these results (Sobal & Stunkard, 1989). Overweight and obesity are associated with negative discrimination in at least three main areas in the Western world: employment, education and health care (Puhl & Brownell, 2001). Obese persons are less healthy and earn less than the general population (Cawley, 2004; Lundborg *et al.*, 2006), are considered as less preferred dating as well as sexual partners, and are less likely to marry (Sobal *et al.*, 1995; Chen & Brown, 2005; Fu & Goldman, 1996).

Overweight and obesity are generally the result of a surplus in energy balance stemming from excess food intake in relation to needs. Naturally, the body constitution is under the influence of individual behaviour and, hence, affected by

more or less deliberate choices made by the individual over the life-course. Further, forming one's bodily shape in either direction is a rather long-term process. From a traditional health-economics perspective *à la* Grossman (1972), one may therefore view exercise and dietary behaviour as investments (or disinvestments) in health and attractiveness (Bolin *et al.*, 2006).

The incentives to make the considered health/attractiveness investments in order to gain a high value on the marriage market vary with marital status. Singles face greater expected returns than happily married individuals. However, all marriages do not turn out to be for life, and divorce rates are increasing, yielding a steady influx of formerly married individuals into the marriage market. Indeed, marriage has been found to be associated with weight gains and divorce with weight loss (Jeffery & Rick, 2002). Since weight change is a long-term process, not only single and separating individuals may be concerned about their outer appearance from this respect, but also married individuals have a precautionary motive to be slender and prepared for a potential future as divorced (or widowed for that matter), a motive that increases with the risk of divorce.

The main purpose of this paper is to analyse whether such a motive may influence married individuals to make health investments resulting in an 'appropriate' bodily stature, proxied by their body mass index (BMI). Naturally, it is impossible to measure the actual risks of divorce within individual marriages. Instead, the national divorce rate is used as a proxy for all married people. Singles should be less affected by the national divorce risk as they already are in the marriage market. Thus, the basic theory posed, is that married individuals have some perception of divorce risks on a general basis, and that these risks are negatively correlated with their BMI, whereas there is no such correlation for single individuals.

An alternative, yet similar theory is that the causal link is just the opposite: divorce risks are high in populations where married people continue to compete in the marriage market by keeping themselves in trim. However, both theories are built on the same basic premise: married people are influenced by marriage market conditions and incentives when deciding upon investments in their outer appearance (BMI). Either they live under cultural conditions allowing them to continue to compete in the marriage market, or they prepare themselves as a consequence of high expectations of becoming divorced, hence re-entering the marriage market. Regardless of the exact timing, origin and magnitude of the two possible underlying causal arrows, they both give rise to the same public health-related suggestion: dynamic marriage markets, implied by high divorce rates, are associated with low BMI among the married. In other words, the main empirical hypothesis is that the national divorce rate is connected to the BMI of married, but not single, individuals.

Marital life-courses and expectations are certainly not the only factors associated with body weight. Socioeconomic status captured by occupation or education correlates negatively with BMI, obesity prevalence and weight gain in developed societies (Matthews *et al.*, 1999; Ball & Crawford, 2005). Moreover, labour market status may affect BMI. Being employed may be associated with a more active lifestyle compared with those being unemployed. On the other hand, many jobs are sedentary, possibly leading to less expenditure of calories. In line with this, Ruhm (2000) found unemployment rates to be negatively related to BMI. Alcohol has a high caloric

content but there is mixed evidence as to whether or not alcohol consumption contributes to weight gain (see e.g. Prentice, 1995). Metabolic rates are higher among smokers than among non-smokers; smokers generally weigh less than non-smokers, and quitting smoking is often associated with a weight gain (Klesges *et al.*, 1989; Pinkowish, 1999). Body mass index has been found to be negatively associated with functional ability, as measured, for instance, through ADL limitations (Ferraro & Booth, 1999; Kaplan *et al.*, 2003; Sulander *et al.*, 2005). More generally, both functional ability and health limitations may function as barriers to conduct physical exercise, which, in turn, may affect BMI (Ford & Herman, 1995; Ford *et al.*, 2003). There are also results indicating that the above processes may be different for men and women (Williamson & O'Neil, 1998; Sobal, 2004; Cawley *et al.*, 2004; Bolin *et al.*, 2006).

Divorce rates differ among European countries. The SHARE (Survey of Health, Ageing, and Retirement in Europe) data collection project provides an opportunity to control for the individual factors mentioned above, analysing to what extent Europeans, in their physical-attractiveness investment behaviour, are influenced by their risk of divorce.

Data

The Survey of Health, Ageing, and Retirement in Europe (SHARE) data collection project provides a multidisciplinary and cross-national micro-database of approximately 22,000 Europeans. The first wave of data was collected in 2004. The database contains representative samples from the non-institutionalized population aged 50 and over in respective participating country. Spouses were also interviewed, regardless of age. The eleven countries represent Northern Europe (Denmark and Sweden), Central Europe (Austria, France, Germany, Switzerland, Belgium and the Netherlands) and Southern Europe (Spain, Italy and Greece). In this study, data from Belgium were not included, since they had not yet been collected. The database comprises, *inter alia*, information on self-reported height and weight, which was used to construct body mass index. The database also contains various health-related and socioeconomic variables such as self-reported health, physical functioning, cognitive functioning, psychological health, well-being, life satisfaction, current work activity, consumption and education. As divorce rates decrease with high age, the sample used in the analysis was restricted to those below 60 years of age. Moreover, a lower age limit was set at 40. Consequently, the analyses were performed on individuals between 40 and 60 years of age. This yielded a sample of 6013 married and 1124 single individuals. The latter category included 551 never-married and 573 divorced individuals. Two-hundred and sixty five widowed individuals were not included as re-marriage frequencies, especially among widows, has been found to be rather low (Chamie & Nsuly, 1981; Haskey, 1999), which may indicate low participation in the marriage market.

Most married people in the study (aged 40–59) have been married for a long time. Hence, from initially being single, they have adapted to their marital life-course when it comes to social roles and dietary and exercise behaviour.

The design of SHARE follows that of the US Health and Retirement Study (HRS) and the English Longitudinal Study of Ageing (ELSA). A description of methodological issues can be found in Börsch-Supan & Jürges (2005).

Table 1. Divorce risk and average BMI among married individuals across countries in the studied sample

Country	Divorce risk	Average BMI among married (SD)
Northern Europe		
Sweden	0.11	25.66 (3.87)
Denmark	0.20	25.52 (4.02)
Central Europe		
Austria	0.14	27.00 (4.44)
Germany	0.08	26.41 (4.42)
Netherlands	0.06	26.17 (4.17)
France	0.12	25.64 (4.66)
Switzerland	0.13	25.25 (4.26)
Southern Europe		
Spain	0.02	27.30 (4.52)
Italy	0.02	26.39 (4.47)
Greece	0.05	26.83 (4.12)
Total	0.08	26.27 (4.15)

Dependent variable

The dependent variable was body mass index (BMI), calculated by dividing weight in kilograms by the square of length in metres. This variable was constructed using the self-reported information on height and weight. In the sample of married people, the average person had a BMI of 26.27 (men: 26.82; women: 25.91). The corresponding figure among singles was 26.09 (men: 26.63; women: 25.64). There was substantial variation in average BMI across countries (see Table 1).

Main explanatory variable

The main focus is set on the potential association between BMI and divorce risk. A simple indicator of relevant, age-specific (40–59) national divorce rates in the studied sample was obtained by dividing the number of divorced by the number of married for each country. This measure was then used as a proxy for general divorce risk (see Table 1). The estimated divorce risk varies quite substantially between the countries involved, providing the desired variation. Clearly, there seems to be a south–north gradient in the divorce risk. In Italy, for instance, the estimated divorce risk was 0.02, while the corresponding figure for Denmark was 0.20. Moreover, there seems to be a general negative association among married people between divorce risk and BMI. For instance, Greece had a low divorce risk but a high average BMI, whereas the opposite was true for Denmark.

Individual background variables

Essential background information was included in the form of basic demographic (i.e. age and gender), socioeconomic (i.e. years of education and whether the

respondent was employed or not) and health-related (number of adverse health symptoms and daily activity limitations together with smoking and alcohol consumption) variables. It should be noted that the inclusion of smoking is made under the assumption that people do not use tobacco consumption as a direct weight-control device. The potential endogeneity problem of including smoking is briefly evaluated in the Results section.

Descriptive statistics are shown in Table 2. Overall, the typical married individual was 53 years old, had 11.3 years of education, and reported 1.1 health symptoms. Twenty-five per cent were smokers, 23% consumed alcohol daily or almost daily and 64% were employed. The singles in the sample were rather similar; the typical single was 54 years old, had 11.8 years of education, and reported 1.3 health symptoms. Moreover, 39% were smokers, 21% consumed alcohol daily or almost daily and 62% were employed. Single women had about one more year of education than married women (12 vs 11 years), whereas men were less affected by marital status from this respect. There was no gender difference whatsoever in employment among singles (62% employed) but married men were employed more (76%) and married women less (56%). Further, married and single men were smokers to a higher extent and consumed alcohol more frequently than women of respective marital status.

Methods

The demand for an attractive (i.e. low) body mass was specified empirically as:

$$\text{BMI}_i = x_i' \beta + \varepsilon_i \quad (1)$$

where BMI_i is the BMI of person i , x_i is a vector of explanatory variables including the national divorce risk and individual socioeconomic and demographic characteristics, β is the associated vector of coefficients, and ε_i is the error term. The influence of the exogenous variables on BMI was estimated via ordinary least squares (OLS).

Results

Firstly, results from the estimation of equation (1), regarding individual background variables, are reported. Secondly, the association between divorce risk and BMI, controlling for these individual background variables, is presented. Thirdly, since there may be special doubts about the appropriateness of treating smoking as an exogenous variable, the impact of excluding smoking as an explanatory variable is evaluated. Fourthly, the possibility that any of the found effects are gender-dependent is tested.

Individual background variables

The first columns of Table 3 report the estimated parameters of the estimation of equation (1) for the married and single samples respectively. For several individual background variables, the effect on BMI is roughly the same regardless of marital status: education ($-0.11, -0.13$), employment ($-0.58, -0.36$), and number of symptoms (0.44 and 0.65) for married and single people, respectively. Daily activity

Table 2. Descriptive statistics: mean (SD)

	Married			Single	
	Categories	Men and women	Men	Women	Men and women
<i>Dependent variable</i>					
Body mass index (BMI)		26.27 (4.15)	26.82 (3.79)	25.91 (4.32)	26.09 (4.75)
<i>Exogenous variables</i>					
Basic demographic					
Age		52.94 (4.40)	54.37 (3.09)	52.00 (4.87)	53.59 (3.28)
Age squared		282.36 (454.01)	2965.31 (332.33)	2728.17 (496.86)	2882.17 (347.06)
Gender	Male (ref.)				
	Female	0.60 (0.49)	—	—	0.55 (0.50)
Socioeconomic					
Education (years)		11.31 (4.06)	11.84 (3.98)	10.92 (4.08)	11.81 (3.95)
Employment	No (ref.)				
	Yes	0.64 (0.48)	0.76 (0.43)	0.56 (0.50)	0.62 (0.49)
Health related					
Number of symptoms		1.10 (1.31)	0.92 (1.13)	1.25 (1.41)	1.30 (1.53)
ADL limitations	No (ref.)				
	Yes	0.06 (0.40)	0.07 (0.40)	0.06 (0.40)	0.11 (0.51)
Daily or almost daily alcohol consumption	No (ref.)				
	Yes	0.23 (0.42)	0.35 (0.48)	0.14 (0.35)	0.21 (0.41)
<i>National divorce rate</i>		0.078 (0.055)	0.087 (0.053)	0.073 (0.056)	0.106 (0.057)

Table 3. Results from multivariate OLS regressions on BMI

Exogenous variables	Categories	Married men and women		Single men and women		Married men		Married women		Gender difference in effect for married		Single men		Single women		Gender difference in effect for singles	
		Coeff.	p value	Coeff.	p value	Coeff.	p value	Coeff.	p value	p value		Coeff.	p value	Coeff.	p value	p value	
Constant		7.99	0.34	30.06	0.15	21.72	0.20	11.04	0.28			11.63	0.81	43.00	0.08		
Basic demographic																	
Gender	Male (ref.)																
	Female	-1.47	0.00	-1.37	0.00												
Age		0.78	0.01	-0.15	0.85	0.28	0.66	0.60	0.13	0.67		0.60	0.74	-0.75	0.93	0.50	
Age squared		-0.01	0.02	-0.00	0.77	0.00	0.60	-0.01	0.17	0.76		-0.01	0.74	0.01	0.35	0.46	
Socioeconomic																	
Education (years)																	
Employment	No (ref.)	-0.11	0.00	-0.13	0.00	-0.06	0.00	-0.15	0.00	0.00		-0.15	0.01	-0.11	0.06	0.69	
	Yes	-0.58	0.00	-0.36	0.24	-0.43	0.03	-0.61	0.00	0.51		0.17	0.68	-0.77	0.08	0.12	
Health related																	
Number of symptoms		0.44	0.00	0.65	0.00	0.42	0.00	0.43	0.00	0.90		0.71	0.00	0.62	0.00	0.70	
Number of ADL limitations		0.64	0.00	0.26	0.70	0.35	0.24	0.88	0.00	0.18		-0.11	0.91	0.64	0.47	0.56	
Smoker	No (ref.)																
	Yes	-0.54	0.00	-0.96	0.00	-0.40	0.01	-0.58	0.00	0.46		-1.01	0.01	-0.90	0.03	0.84	
Daily or almost daily alcohol consumption	No (ref.)																
	Yes	-0.60	0.00	-0.61	0.07	0.00	1.00	-1.28	0.00	0.00		-0.38	0.36	-0.82	0.16	0.53	
National divorce rate		-3.28	0.00	-0.84	0.73	-3.06	0.03	-3.21	0.04	0.94		-0.93	0.78	-0.23	0.95	0.88	
Observations		6013		1124		2584		3429				511		613			

limitations affected BMI more strongly among married people (0.64) than among singles (0.26, insignificant). The association between being a smoker and BMI was somewhat stronger for single (-0.96) than for married people (-0.54). Daily or almost daily alcohol consumption showed a similar effect for married (-0.60) and single people (-0.61), but were only significant at the 7% level in the latter case. The estimated difference in BMI between men and women was roughly equal among married (-1.47) and single people (-1.37).

Divorce risk

Controlling for these individual effects leaves a marked difference in national divorce-rate effect between the marital statuses (see Table 3). Whereas this rate was negatively associated with BMI for married individuals (-3.28), it was rather unrelated to the BMI of singles (-0.84 , highly insignificant). Thus, the results suggest that, for married people, an increase in the divorce risk by 0.1 (BMI effect: $0.1 \times -3.28 \approx -0.33$) would be associated with a change in BMI similar to that of 3 years of additional schooling (BMI effect: $3 \times -0.11 \approx -0.33$).

Excluding smoking as an explanatory variable

The above figures are estimated under the assumption that the explanatory variables are all truly exogenous. Strictly speaking, only age and, maybe, gender are completely exogenous in a lifetime perspective. In a generalized human-capital model, all other individual background variables might be seen, at least partly, as the outcomes of simultaneous and interdependent individual decisions. Available cross-section data do not permit a more sophisticated analysis of this issue, but a somewhat closer look at smoking is taken below. Though smoking is clearly linked to BMI, people probably do not start to smoke primarily in order to lose weight, but fear of gaining weight may prevent smokers from quitting (Pomerleau *et al.*, 1993). Hence, from the perspective taken here, continuation of smoking could be one means by which married individuals react to a high divorce risk, *ceteris paribus*, diminishing the true divorce-risk BMI effect presented above. However, excluding smoking from the estimations only very mildly affects the estimates (the divorce-risk effect would rise from 3.28 to 3.40, and the influence of the other variables on BMI would remain virtually unchanged). This suggests that the rather cautious approach taken above, including smoking as an exogenous, health-related lifestyle factor, that affects weight, under the assumption that the *decision* to smoke in general is not connected to weight concerns, is robust.

Gender differences

In order to test for gender differences, separate estimations were made for males and females of respective marital status. A statistical evaluation of the significance of the resulting gender discrepancies was obtained by adding a gender dummy and interactions between this dummy and all the other variables to the original estimations (of equation (1)). The results for married individuals of respective sex are

presented in the middle columns of Table 3. The effect of the divorce-risk variable was similar for females (-3.2) and males (-3.1) (main effect significant for both husbands and wives, and needless to say, the associated gender interaction term was highly insignificant, p value= 0.94). The only significant interaction effects were those between gender on the one hand and education and alcohol consumption on the other. Education showed a stronger effect on BMI among females (-0.15) than among males (-0.06). The effect of daily or almost daily alcohol consumption on BMI was negative among females (-1.28) and non-existent among males (0.00).

Finally, results from regressions for singles by sex are reported in the last columns of Table 3. None of the considered gender interaction terms was significant, as revealed in the last column of Table 3. However, it is noted that qualitatively, the estimated parameters of daily alcohol consumption followed the gender pattern found for married individuals, i.e. that the effect was greater for women. In sum, there was no evidence for gender differences in the effect of divorce rate on BMI, either among married people, or among singles. Indeed, most variables showed similar associations with BMI for males and females.

Conclusion

Some comments on the two major limitations of the study are warranted. Firstly, at present there are no panel-data available from the SHARE data collection project, and cross-sectional data do limit the possibilities for analysis and firm conclusions. Secondly, it should be observed that the national divorce rate was the only nation-specific community variable used, and this rate may well be correlated with other unobserved heterogeneity among the studied countries and, hence, potentially capture other causal mechanisms. However, controlling for a number of individual factors (education etc., correlated with BMI in line with previous empirical research), such mechanisms ought to strike throughout the whole population, affecting people uniformly regardless of, for example, marital status.

That said, this study yielded a rather speculative result. Observed national divorce risks were negatively associated with BMI for married people but virtually uncorrelated with BMI for singles. Hence, it seems that married people in societies where divorce risks are high are more inclined to invest in their outer appearance. One interpretation is that high divorce rates make married people prepare for a potential divorce and future return to the marriage market. Another is, of course, that married individuals, especially in societies where divorce is common, perceive that being overweight may affect spousal relations and more easily lead to divorce than where divorce is more unusual. Contradicting this latter line of reasoning, the association among young married US citizens between overweight and obesity on the one hand, and marital dissolution on the other, is weak (Fu & Goldman, 2000), whereas there is a negative connection between obesity and the rate at which singles enter marriage (Fu & Goldman, 1996). It could also be that the causal link between national divorce rates and BMI among married individuals is just the opposite, with married populations continuing to compete in the marriage market by keeping themselves fit, resulting in high divorce rates. Nevertheless, this suggestion is also based on the

fundamental idea that marriage market conditions govern the attractiveness investment behaviour of married people. The potential relative strength of any underlying causal arrows going in opposite directions is hard to assess from both theoretical as well as empirical perspectives. From a broader standpoint, any inter-relation between BMI and divorce rates may be viewed as part of the continuous, dynamic process in which individual behaviour, institutions and norms interact to form the culture of society.

A growing literature deals with the role of economic and non-economic incentives in explaining the rise in average BMI experienced in most Western countries (e.g. Philipson, 2001; Chou *et al.*, 2004). In parallel, marriage-market studies have been conducted focusing on assortative mating and matching processes among individuals of different attributes, mainly regarding education and earnings (e.g. Nakosteen *et al.*, 2004). However, no prior studies have focused on the marriage-market-related incentives for married individuals of maintaining an attractive physical appearance generated by the increase in divorce rates experienced in most Western countries. The results obtained in this study indicate that international variation in divorce risks may explain some of the spatial differences in average BMI observed across otherwise quite similar nations. In fact, the results suggest that the increase in overweight and obesity experienced in most Western countries would actually have been greater, had the same countries not experienced a simultaneous increase in divorce rates reflecting a more dynamic marriage market.

Further research should aim at analysing the relationship between divorce risk and BMI using other proxies of divorce risk than the one used in the present study. Using measures of divorce risk at more disaggregated levels, such as neighbourhoods, for instance, may be one option. Moreover, the usage of panel-data would allow for better controls of unobserved variables being correlated both with BMI and divorce risks. Among the characteristics determining the value in the marriage market from a dynamic perspective, BMI has the advantage of being comparatively changeable over the lifecycle and under the direct influence of individual choices and behaviour. After all, it is impossible to, for example, decrease one's educational level and very few people over the age of 40 engage in formal schooling. Hence, BMI may serve as a mirror into how marriage-market-related incentives affect the behaviour of middle-aged individuals.

Acknowledgments

This paper uses data from the early release 1 of SHARE 2004. This release is preliminary and may contain errors that will be corrected in later releases. The SHARE data collection has been primarily funded by the European Commission through the 5th framework programme (project QLK6-CT-2001-00360 in the thematic programme Quality of Life programme area). Additional funding came from the US National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, Y1-AG-4553-01 and OGHA 04-064). Data collection in Austria (through the Austrian Science Foundation, FWF), Belgium (through the Belgian Science Policy Administration) and Switzerland (through BBW/OFES/UFES) was nationally funded. The SHARE data set is introduced in Börsch-Supan *et al.*

(2005); methodological details are contained in Börsch-Supan & Jürges (2005). Additional funding for the Swedish participation in the SHARE data collection project came from the Bank of Sweden Tercentenary Foundation, the Swedish Council for Working Life and Social Research and the Swedish Social Insurance Agency. The research reported in this paper was supported by a grant from the Swedish Council for Working Life and Social Research, which is gratefully acknowledged.

References

- Ball, K. & Crawford, D.** (2005) Socioeconomic status and weight change in adults: a review. *Social Science and Medicine* **60**, 1987–2010.
- Becker, G. S.** (1974) A theory of marriage. In Schultz, T. W. (ed.) *Economics of the Family*. University of Chicago Press, Chicago, pp. 299–344.
- Becker, G. S.** (1981) *A Treatise on the Family*. Harvard University Press, Cambridge.
- Bloch, F. & Ryder, H.** (2000) Two-sided search, marriages and matchmakers. *International Economic Review* **41**, 93–115.
- Bolin, K., Lindgren, B. & Rössner, S.** (2006) The significance of overweight and obesity for individual health behaviour – an economic analysis based on Swedish surveys of living conditions 1980/81, 1988/89, and 1996/97. *Scandinavian Journal of Public Health* **34**, 422–431.
- Börsch-Supan, A., Hank, K. & Jürges, H.** (2005) A new comprehensive and international view on ageing: introducing the survey of health, ageing and retirement in Europe. *European Journal of Ageing* **2**, 245–253.
- Börsch-Supan, A. & Jürges, H.** (eds) (2005) *Health, Ageing and Retirement in Europe – Methodology*. Mannheim Research Institute for the Economics of Ageing.
- Brink, P. J.** (1995) The fattening room among the Annang of Nigeria. In Pollock, N. J. & de Garine, I. (eds) *Social Aspects of Obesity*. Gordon and Breach, New York.
- Cawley, J.** (2004) The impact of obesity on wages. *Journal of Human Resources* **XXXIX**, 451–474.
- Cawley, J., Markowitz, S. & Tauras, J.** (2004) Lighting up and slimming down: The effects of body weight and cigarette prices on adolescent smoking initiation. *Journal of Health Economics* **23**, 293–311.
- Chamie, J. & Nsuly, S.** (1981) Sex differences in remarriage and spouse selection. *Demography* **18**, 335–348.
- Chen, E. Y. & Brown, M.** (2005) Obesity stigma in sexual relationships. *Obesity Research* **13**, 1393–1397.
- Chou, S. Y., Grossman, M. & Saffer, H.** (2004) An economic analysis of adult obesity: Results from the behavioral risk factor surveillance system. *Journal of Health Economics* **23**, 565–587.
- Coombs, R. H.** (1991) Marital status and personal well-being: A literature review. *Family Relations* **40**, 97–102.
- Ferraro, K. F. & Booth, T. L.** (1999) Age, body mass index, and functional illness. *Journal of Gerontology: Social Sciences* **54B**, S339–348.
- Ford, E. S., Heath, G. W., Mannino, D. M. & Redd, S. C.** (2003) Leisure-time physical activity patterns among US adults with asthma. *Chest* **124**, 432–437.
- Ford, E. S. & Herman, W. H.** (1995) Leisure-time physical activity patterns in the U.S. diabetic population. Findings from the 1990 National Health Interview Survey–Health Promotion and Disease Prevention Supplement. *Diabetes Care* **18**, 27–33.
- Fu, H. & Goldman, N.** (1996) Incorporating health into marriage choice models: demographic and sociological perspectives. *Journal of Marriage and the Family* **58**, 740–758.

- Fu, H. & Goldman, N. (2000) The association between health-related behaviours and the risk of divorce in the US. *Journal of Biosocial Science* **32**, 63–88.
- Goldman, N. (1993) Marriage selection and mortality patterns: Inferences and fallacies. *Demography* **30**, 189–207.
- Grossman, M. (1972) On the concept of health capital and the demand for health. *Journal of Political Economy* **80**, 223–255.
- Haskey, J. (1999) Divorce and remarriage in England and Wales. *Population Trends* **95**, 18–22.
- Helmchen, L. A. & Henderson, R. M. (2004) Changes in the distribution of body mass index of white US men, 1890–2000. *Annals of Human Biology* **31**, 174–181.
- Hu, Y. & Goldman, N. (1990) Mortality differentials by marital status: An international comparison. *Demography* **27**, 233–250.
- James, P., Leach, R., Eleni, K. & Shayeghi, M. (2001) The worldwide obesity epidemic. *Obesity Research* **9** (supplement 4), 228–233.
- Jeffery, R. W. & Rick, A. M. (2002) Cross-sectional and longitudinal associations between body mass index and marriage-related factors. *Obesity Research* **10**, 809–815.
- Joung, I., Van De Mheen, H., Stronks, K., Van Poppel, F. & Mackenbach, J. P. (1994) Differences in self-reported morbidity by marital status and by living arrangement. *International Journal of Epidemiology* **23**, 91–97.
- Kaplan, M. S., Huguet, N., Newsom, J. T., McFarland, B. H. & Lindsay, J. (2003) Prevalence and correlates of overweight and obesity among older adults: findings from the Canadian National Population Health Survey. *Journal of Gerontology: Medical Sciences* **58A**, 1018–1030.
- Klesges, R., Meyers, A., Klesges, L. & LaVasque, M. (1989) Smoking, body weight, and their effects on smoking behavior: A comprehensive review of the literature. *Psychological Bulletin* **106**, 204–230.
- Lam, D. (1988) Marriage markets and assortative mating with household public goods: Theoretical results and empirical implications. *Journal of Human Resources* **23**, 462–487.
- Lundborg, P., Lindgren, B., Höjgård, S. & Bolin, K. (2006) Obesity and labour market outcomes among the elderly in Europe. In Bolin, K. & Cawley, J. (eds) *Advances in Health Economics and Health Services Research*, Vol. 17: *The Economics of Obesity*. Elsevier, New York (in press).
- Mare, D. (1991) Five decades of educational assortative mating. *American Sociological Review* **56**, 15–32.
- Matthews, S., Manor, O. & Power, C. (1999) Social inequalities in health: are there gender differences? *Social Science and Medicine* **48**, 49–60.
- Murray, J. (2000) Marital protection and marital selection: Evidence from a historical-prospective sample of American men. *Demography* **37**, 511–521.
- Nakosteen, R., Westerlund, O. & Zimmer, M. (2004) Matching and earnings: evidence from the unmarried population in Sweden. *Journal of Human Resources* **39**, 1033–1044.
- Philipson, T. (2001) The world-wide growth in obesity: an economic research agenda. *Health Economics* **10**, 1–7.
- Pinkowish, M. D. (1999) Hand in glove: smoking cessation and weight gain. *Patient Care* **33**, 134.
- Pomerleau, C. S., Ehrlich, E., Tate, J. C., Marks, J. L., Flessland, K. A. & Pomerleau, O.F. (1993) The female weight-control smoker: A profile. *Journal of Substance Abuse* **5**, 391–400.
- Prentice, A. M. (1995) Alcohol and obesity. *International Journal of Obesity* **19**, 44–50.
- Puhl, R. & Brownell, K. (2001) Bias, discrimination, and obesity. *Obesity Research* **9**, 788–805.
- Ruhm, C. (2000) Are recessions good for your health? *Quarterly Journal of Economics* **115**, 617–650.

- Sobal, J.** (2004) Sociological analysis of the stigmatisation of obesity. In Germov, J. & Williams, L. (eds) *A Sociology of Food and Nutrition: The Social Appetite*. 2nd edition. John Wiley, Melbourne.
- Sobal, J., Nicolopoulos, V. & Lee, J.** (1995) Attitudes about overweight and dating among secondary school students. *International Journal of Obesity and Related Metabolic Disorders* **19**, 376–381.
- Sobal, J. & Stunkard, A. J.** (1989) Socioeconomic status and obesity: A review of the literature. *Psychological Bulletin* **105**, 260–275.
- Sulander, T., Martelin, T., Rahkonen, O., Nissinen, A. & Uutela, A.** (2005) Associations of functional ability with health-related behavior and body mass index among the elderly. *Archives of Gerontology and Geriatrics* **40**, 185–199.
- Waite, L. J. & Gallagher, M.** (2000) *The Case for Marriage: Why Married People are Happier, Healthier, and Better off Financially*. Harvard University Press, Cambridge, MA.
- Williamson, D. A. & O'Neil, P. M.** (1998) Behavioral and psychological correlates of obesity. In Bray, G. A., Bouchard, C. & James, W. P. T. (eds) *Handbook of Obesity*. Marcel Dekker, New York.
- Van Poppel, F. & Joung, I.** (2001) Long-term trends in marital status mortality differences in the Netherlands 1850–1970. *Journal of Biosocial Science* **33**, 279–303.